



Human Factors Integration in Engineering Design - General Requirements



This Australian Standard® AS 7470 Human Factors Integration in Engineering Design - General Requirements was prepared by a RISSB Development Group consisting of representatives from the following organisations:

Acmena	ARTC	Asset Standards Authority (TfNSW)
AusSafe Consulting Pty Ltd	Brookfield Rail	Downer Group
FMGL	Metro Trains Melbourne	ONRSR
Pacific National	Queensland Rail	Sydney Trains
V/Line		

The Standard was approved by the Development Group and the Safety Standing Committee in October, 2016. On November 21, 2016 the RISSB Board approved the Standard for release.

This standard was issued for public consultation and was independently validated before being approved.

Development of the standard was undertaken in accordance with RISSB's accredited process. As part of the approval process, the Standing Committee verified that proper process was followed in developing the standard.

RISSB wishes to acknowledge the positive contribution of subject matter experts in the development of this standard. Their efforts ranged from membership of the Development Group through to individuals providing comment on a draft of the standard during the open review.

I commend this standard to the Australasian Rail Industry as it represents industry good practice and has been developed through a rigorous process.



Paul Daly
Chief Executive Officer
Rail Industry Safety and Standards Board

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Contents

1	Introduction.....	5
1.1	Purpose	5
1.2	Scope	5
1.3	Compliance.....	6
1.4	Referenced documents	7
1.4.1	Normative references	7
1.4.2	Informative references.....	7
1.5	Definitions.....	7
2	Human Factors integration	9
2.1	Process requirements.....	9
2.2	Human Factors integration process.....	10
3	Generic Human Factors requirements	12
3.1	Design requirements	12
3.2	Anthropometric data	14
3.3	Information content.....	14
3.4	Audibility and intelligibility of messages.....	15
3.5	Alarms and alerts.....	15
3.6	Controls and displays	16
3.7	Workspace and task design	17
3.8	Glare, reflections and line of sight	17
3.9	Customers and the public.....	17
3.9.1	Users with disabilities	17
3.9.2	Information for customers and the public	18
3.9.3	Customer seating	18
3.9.4	Handrails, poles and grab points on vehicles	18
3.9.5	Passenger flows and wayfinding	19

Appendix Contents

Appendix A	Hazards Addressed by this Standard	20
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1 Introduction

1.1 Purpose

This Standard has been prepared to support Human Factors Integration (HFI) into the engineering design process within the Australian Rail Industry.

This standard describes the requirements for organisations conducting or procuring engineering design activities, services or products to —

- incorporate Human Factors within their engineering design processes,
- ensure their products comply with the generic Human Factors requirements set out in this standard, and
- use the HFI process to identify the specific Human Factors requirements of the system or asset being designed, procured or modified.

The aim of the requirements specified in this document is to optimise overall system performance through the systematic consideration of human capabilities and limitations as inputs to an iterative design process.

Adequate integration of Human Factors in all phases of a system's development lifecycle ensures its safety, performance and fitness for purpose.

For an operational system to deliver the expected benefits, it is essential that the human interactions with the system and system elements are well designed through the application of established HF principles, knowledge and methods. The process for achieving this is HFI.

The aim of the HFI process is to identify then mitigate and prevent Human Factors related risk and ensure that human-system interactions are optimised for system performance and safety. Incorporating HFI into the engineering design process also facilitates a high level of system acceptance amongst end users.

A supplier of engineered assets to the Australian rail industry is responsible for ensuring that the assets and systems they provide are safe to operate and maintain, and that all safety risks have either been eliminated or managed so far as is reasonably practicable (SFAIRP). Supporting evidence, demonstrating HFI in safety risk management activities, will provide an important contribution to an overall safety and operational assurance argument for most assets.

The benefits of considering HF in the design process are not limited to safety. Equally valuable benefits can be gained regarding the operation and maintenance of the system. These include but are not limited to —

- minimising errors,
- improving effectiveness,
- improved user comfort, and
- increased system acceptance.

To achieve these benefits, it is important to take HF into account early, starting with feasibility, solution optioneering, conceptualising, and throughout the full design process.

1.2 Scope

This standard provides the requirements for Human Factors Integration (HFI) within the following activities: